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Academic self-concept, reading attitudes and approaches to learning of children with dyslexia: do they differ from their peers?

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This research aimed at exploring the motivation for reading of pupils with dyslexia, and to investigate whether they differ from their peers. A total of 32 pupils formed the LD group (22 boys and 10 girls, 5th- and 6th-graders) who were diagnosed with dyslexia. A comparison group was formed of pupils who attended the same classes ($N = 210$), and these were divided into two groups (average/low performance, $N = 115$; high performance, $N = 95$), according to teachers' ratings of pupils' performance on reading. Self-report measures were used to assess perceptions of academic ability, reading attitudes and approaches to learning. The results revealed that dyslexic pupils displayed lower academic self-concept than the low/average and high performance groups on all domains, except Practical ability. Moreover, dyslexic pupils perceived reading less as a function of personal development, both enjoyment and utilitarian, as compared to their peers. Finally, the dyslexic group adopted the surface approach to learning, indicating an external motive, similarly to the average/low group, and adopted the deep approach to learning less as compared to their high achieving peers. The implications of these findings are discussed at pupil, teacher and classroom level.

Keywords: *Dyslexia; Academic self-concept; Reading attitudes; Learning approaches*

Introduction

Empirical evidence has acknowledged the importance of both cognitive and affective domains in explaining individual differences in academic achievement. The self system is a significant factor in reading success, motivational orientations, self-esteem and learning approaches. Low self-esteem, specifically in scholastic competence and social acceptance, has been linked with social, emotional and behavioural difficulties.

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In the last years, research has investigated these factors in relation to students with difficulties in reading. Children with dyslexia were shown to have less favourable academic self-perceptions as compared to their average peers. The development of lower self-concept can be accounted for by the dyslexic children's negative experiences, repeated school failure, disappointment, emotional withdrawal and passivity in the school setting (Riddick *et al.*, 1999; Humphrey, 2002).

Academic self-concept

It has been assumed that students' self-concept of ability provides a basis for their task motivation (Deci & Ryan, 1985). The view of a reciprocal relationship between self-concept and achievement is well documented (Covington, 1984; Hatzichristou & Hopf, 1992; Lawrence, 1996). An earlier comprehensive meta-analytic review by Chapman (1988) and a recent review by Zeleke (2004) showed consistent evidence that the academic self-concept of learning disabled (LD) students is more negative than that of their peers with average performance. However, empirical support on the self-concept of children with learning disabilities has been less than straightforward, mainly due to methodological difficulties that are reported below.

First, given the heterogeneity of the dyslexic population and the lack of agreement on the criteria used in identifying children with LD, the comparisons across studies are difficult and of low validity. Furthermore, the selection criteria for the low-achievement groups have also varied, including using the 25th percentile point as a cut-off score to distinguish children with LD from non-LD students, or simply using teachers' ratings (Zeleke, 2004).

Secondly, the majority of studies in this area have examined the relationship between general self-esteem as opposed to specific academic self-esteem and achievement. Taking into account the multidimensional and hierarchical models of the self (Shavelson *et al.*, 1976; Harter 1983, 1985; Marsh, 1990), it has been supported that this relationship is stronger when academic self-esteem is examined and children with literacy difficulties are involved. Academic self-concept is also multidimensional, having components in several academic subjects.

In addition, studies on different school settings—i.e. mainstream schools and special schools—demonstrated that dyslexic children in special schools typically have higher academic self-concept as compared to children in mainstream schools, consistent with the social comparison theory (Casey *et al.*, 1992; Crozier *et al.*, 1999; Humphrey, 2002). This difference is less evident in other areas of self-concept (Bear *et al.*, 2002). It is also essential to note the perceived importance of a particular domain for a person's sense of general worth. For example, Kloomak and Cosden (1994) found that a group of LD children presented positive general self-concept because they used to relate their self-evaluations to perceived competence in non-academic domains. It follows that when one has to assess self-esteem, he/she has to take into account how important a person's perception of ability in a particular domain is (Harter, 1999).

Another difficulty encountered in this area is the determination of the causality in the relationship in either direction, mainly due to the methodology used, as a great number of studies are correlational. A number of studies have suggested that self-esteem is actually a consequence of achievement—i.e. patterns of positive or negative experiences in school result in feelings of accomplishment or difficulty—and this is in accordance with the skill development theory (Kohn, 1994; Chapman & Tunmer, 1997). On the other hand, there is research, consistent with the self-enhancement theory (Song & Hattie, 1985; Marsh, 1987), which supports that self-concept strongly influences achievement and implying that a positive self-concept is a prerequisite for managing difficulties in learning. This hypothesis has led to the development of self-esteem programmes with the aim of boosting self-esteem, regarding it as key to increased academic achievement (Lawrence, 1996). According to the developmental view, self-esteem has been seen as a sort of mediation between ability and achievement. In this aspect, it could influence subsequent achievement and, in turn, achievement could influence subsequent self-esteem (Humphrey, 2004).

Reading attitudes

In most recent research, attitudes to reading are seen as part of a broader construct: motivation to read. It has been consistently found that high motivation and positive attitudes are related to higher reading achievement and more frequent reading (McKenna *et al.*, 1995; Baker & Wigfield, 1999; Lazarus & Callahan, 2000). Since reading is a process where one gets meaning from the texts, children's attitudes towards reading are positively linked with reading improvement. When students are interested in what is being taught and have access to materials that interest them, then learning, motivation, effort and attitudes improve (Hidi, 1991; Schiefele, 1991). The results of the recent survey 'Progress in International Reading Literacy Study' (PIRLS) (Mullis *et al.*, 2003), comparing 4th-grade pupils' attitudes to reading in 35 countries, showed that children in Greece hold mostly positive attitudes (61% held high attitudes, placing Greece in 8th place).

Reading attitude is typically viewed as a multidimensional concept related to the functions of reading. A number of models of attitudes to reading have been proposed (Teale & Lewis, 1980; Greaney & Neuman, 1990; Mathewson, 1994; McKenna, 1994). Across all models, the decision to read is viewed as largely determined by attitudes towards reading. Mathewson (1994) supported that attitudes function as a causal agent upon the reading process. The factors that may influence children's positive attitudes towards reading are what the child believes about others' expectations; and what the child believes about his/her reading outcome and the type of prior reading experience. Children's prior beliefs and cognitive-affective knowledge may affect their reading comprehension (Ruddell & Unrau, 1994).

According to Teale and Lewis (1980), reading has three main functions: it aims at the individual's development, it is utilitarian and it focuses on the individual's enjoyment. The function of individual development relates to the value placed on reading

in order to gain insight into self, others and life in general. The utilitarian function relates to the value placed on the role of reading in order to have educational or vocational success and in managing one's life. Enjoyment refers to the pleasure derived from reading; for instance, someone may value reading positively because he/she believes that it will help him/her in school work (high utilitarian), although he/she may not enjoy reading (low enjoyment). In addition, attitudes towards reading influence reading self-concept, together with perceptions of competence in performing reading tasks and that reading activities are generally easy or difficult (Chapman & Tunmer, 1997).

Comparisons with low-skilled, non-disabled students suggest that students with learning disabilities have negative attitudes towards reading, although few studies exist to support these inferences (van Kraayenoord & Schneider, 1999). Studies have documented that students with dyslexia who received reading instruction in special education and resource rooms expressed attitudes to academic and recreational reading that equalled or exceeded those expressed by low and average non-disabled students, implying that perceptions of ability are very important (Lazarus & Callahan, 2000). Moreover, when individuals with dyslexia get involved in voluntary reading in areas of personal interest, they improve their reading ability (Fink, 1995–6).

Learning approaches

Learning is not a passive, externally directed process, but an active, self-directed process, where the learner attaches meaning to his/her experience. Students' approaches to learning refer to the process adopted by the individual prior to the outcome of learning (Marton & Saljo, 1976).

Two of the well-known models that have been widely applied in education are Biggs's (1987a) and Entwistle's (1987) models that categorized approaches to learning as deep and surface approaches. The *surface approach* is characterized by the intention to reproduce the material being studied through routine procedures, because of positive or negative consequences, and implying external motivation. A typical surface approach is rote learning. Surface-motivated students focus on what appears to be the most important and memorize it. The *deep approach* is characterized by the intention to seek meaning from the material being studied, relating it to personally meaningful contexts or to existing prior knowledge, and implying internal motivation. Deep processing leads to high-quality outcomes such as development of analytic skills, relating to previous knowledge and theorizing about what is learned.

Students' adoption of particular learning approaches appears to be affected by internal characteristics such as locus of control, personality and cognitive variables, prior knowledge and skills, past successes and failures and perceptions of the teaching context (Biggs, 1993; Marton & Saljo, 1997). It has been established that children with reading difficulties are less task orientated and more ego-defensive and socially dependent compared to good decoders and good readers (Poskiparta *et al.*, 2003). Bender and Wall (1994) state that students with dyslexia have low scores in academic self-regulation and are less motivated on task performance. Nevertheless, there is

some contrasting evidence that suggests no differences exist in terms of psychosocial functioning between children with low achievement and children with dyslexia (Haager & Vaughn, 1995; Gresham *et al.*, 1996).

Certainly, a connection exists between these different motivational variables. It has been found that the learner's self-concept mediates between conceptions of meaning. There is a significant relationship between deep approaches to learning, internal locus of control and higher self-concept. Poor academic self-concept is linked with the surface approach to learning (Biggs & Moore, 1993; Burnett & Proctor, 2002). In particular, Burnett and Proctor identified weak negative correlations between learner self-concept and surface approaches. Deep approaches showed the highest positive correlations with school self-concept and learning self-concept (Thomson & Hartley, 1980; Kavale, 1988).

Taking into account that the existing literature has focused less on the motivational factors involved in reading difficulties, and specifically dyslexia, and in these cases has rarely studied the mediating influence of such factors as attitudes, self-concept and learning approaches, the present research aimed to investigate these in children with dyslexia. The study also examined possible differences that may be evident in terms of these factors in the profiles of children with dyslexia and their low/average and high achieving peers.

Method

Subjects

The sample consisted of 242 primary school students attending the 5th and 6th grades of six mainstream schools situated in the west areas of Attica (Table 1). The dyslexic students (N = 32; 22 boys and 10 girls, aged 10–12 years) had a statement of dyslexia after assessment at two state Mental Health Centres. The centres belong to the Department of Health and are listed amongst the formal assessment centres for specific learning difficulties. The assessment was carried out by a psychologist and the criteria used by both centres were the same, including: (a) assessment of intelligence, (b) assessment of cognitive skills (i.e. visual discrimination, visual and auditory short-term memory, spatial orientation, laterality, etc.) and (c) assessment of oral reading accuracy, reading rate, reading comprehension, listening comprehension, dictation and free writing using informal reading inventories. At the time of the study, all dyslexic students followed the regular classroom programme and were receiving reading support in one-to-one intervention programmes outside school. A comparison group was formed by pupils who attended the same class as the dyslexic students (N = 210; 120 boys and 90 girls). To test for differences between the two groups in terms of different levels of attainment, the comparison group was divided into three groups (low, average and high), according to a combined score of teacher ratings of pupils' performance in reading accuracy, reading speed and spelling (scale ranging from 1 = lower than average to 5 = higher than average). The three groups of pupils comprising the comparison group were formed as follows: teacher rating 1–2 = low achievement,

Table 1. Distribution of the 242 pupils in the sample, by group and sex

	Gender					
	Boys		Girls		Total	
Group	*F*	%	*F*	%	*f*	%
LD	22	68.8	10	31.3	32	13.2
Average/low performance	73	63.5	42	36.5	115	47.5
High performance	47	49.5	48	50.5	95	39.3
Total	142	58.7	100	41.3	242	100.0

3 = average performance, 4–5 = high performance. After collection of the questionnaires, very few pupils were rated as low performers and the low and average achievement groups were combined (low/average performance $N = 115$ and high performance $N = 95$).

The schools that the 32 dyslexic pupils attended were located and questionnaires distributed to the whole class, after permission was obtained from the assessment centre, the headteacher and parents. During the questionnaire administration, students were assured that their responses would remain confidential; they were asked to write down their name and the initial letter of their surname in order to match the questionnaires to teacher ratings.

Instruments

- *Students' perception of ability scale* (SPAS: Boersma & Chapman, 1992): this is a self-report scale based on the hierarchical model proposed by Shavelson *et al.* (1976), designed to measure children's self-perceptions of their academic abilities and school-related achievement (reading, writing, spelling and maths), as well as perceptions and attitudes towards school in general. The SPAS includes 70 dichotomous items requiring a yes and no answer. It comprises six subscales: General ability, Maths ability, Reading/spelling, Penmanship/neatness, School satisfaction and Confidence in academic ability (Cronbach's alpha = 0.91).
- *Reading attitude scale* (RAS: Teale, 1980): this evaluates children's attitudes to reading, based on the multidimensional model of Teale and Lewis (1980). It comprises 33 items where students are asked to rate how they view reading on a four-point Likert scale (1 = strongly agree to 4 = strongly disagree). The items are divided in three 11-item subscales: Individual development, Utilitarian and Enjoyment. The Individual development scale considers reading as a means of gaining insight into self, others and/or life in general, based on the cognitive component of reading attitude (i.e. *The more I read, the more I learn about myself*). The Utilitarian scale considers reading as a means of achieving in school (i.e. *People who read do best at school*). The Enjoyment scale assesses the affective dimension of reading attitudes (i.e. *I enjoy reading*) (Cronbach's alpha = 0.86).

- *Approaches to learning inventory* (ALI: Burnett & Proctor, 2002): this is a self–report measure, based on Biggs's *Learning process questionnaire* (LPQ: 1987b), modified for primary school children. ALI contains 18 items, where students rate their approach to learning and their motives and strategies on a five-point Likert scale (1 = strongly agree to 5 = strongly disagree). The items comprise two subscales: deep (i.e. *I only feel satisfied, when I know I really understand the topic*), and surface approach (i.e. *I only learn as much as I have to, to pass a test*) (Cronbach's alpha = 0.73).

In addition, the questionnaire administered to students included questions about pupils' use of the library, reading habits, favourite books, borrowing and support with homework.

Statistical analysis

All data screening, processing and analysis procedures were performed using SPSS 10. Factor analysis was carried out to investigate the structure of the translated scales. Univariate ANOVA, with group (Learning disabled, average/low performance and high performance) as independent variable and all subscales of academic self-concept and learning approaches as dependent variables, was performed. Pearson's correlations between the independent and dependent variables were also calculated.

Results

The factor analysis performed confirmed the structure and dimensions of the scales, with the exception of the SPAS, where a new subscale particularly connected with practical skills, such as drawing, was added and named 'practical ability'.

The univariate ANOVA results (Table 2) revealed significant differences between the LD and the two groups of different abilities in terms of all the subscales of self-concept investigated, with the exception of self-concept regarding practical ability. Children in the LD group reported a lower level of self-concept regarding reading ability, penmanship, arithmetic, school satisfaction, general ability and total academic self-concept score, compared to the high and average/low performance groups. Scheffé post-hoc tests revealed significant differences between the LD group and the high performance group in self concept regarding reading/spelling ($F(2,239) = 51.92$, $p = <0.001$), general ability ($F(2,239) = 14.78$, $p = <0.001$) and total score ($F(2,239) = 28.91$, $p = <0.001$). As for self-concept of arithmetic ability ($F(2,239) = 3.88$, $p = <0.05$), school satisfaction ($F(2,239) = 5.91$, $p = <0.005$) and penmanship/neatness ($F(2,239) = 14.07$, $p = <0.001$), the LD group displayed lower levels than the low achieving and the high achieving groups. No significant differences were found in self–concept regarding practical ability in any of the three groups.

As regards reading attitudes (Table 3), ANOVA revealed significant differences between the three groups in the utilitarian attitude to reading ($F(2,239) = 3.54$, $p =$

Table 2. Analysis of variance on academic self-concept, by group

	Group					
	LD	Average/low performance	High performance			
SPAS	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*F*-score	*p*	n^2
SPAS						
Reading/spelling	7.09(3.99)	11.27(3.78)	14.17(2.92)	44.22	<0.001	0.27
Penmanship/neatness	3.91(2.57)	5.94(2.22)	6.28(1.98)	14.07	<0.001	0.10
Arithmetic	9.50(2.82)	9.93(2.96)	10.81(2.48)	2.26	<0.05	0.02
School satisfaction	7.84(2.97)	9.50(2.82)	9.88(2.72)	5.91	<0.005	0.05
General ability	7.22(2.13)	8.34(1.82)	9.10(1.51)	10.96	<0.001	0.08
Practical ability	2.38(0.97)	2.36(0.87)	2.28(0.94)	0.30	n.s.	0.00
Total	41.88(9.12)	51.52(10.86)	57.20(9.24)	23.53	<0.001	0.16

Note: SPAS = *Self-perception of ability scale*.

<0.05). Scheffé post-hoc tests revealed that the LD group perceived reading less as a means of achieving in school, compared only to the pupils of average/low achievement. The LD group scored lower than the other groups in the other two dimensions of reading attitudes, but no significant differences were found.

Finally, the differences in terms of learning approach are depicted in Figure 1. The groups have notable differences in the surface approach to learning. Indeed, the analysis of variance showed a significant difference between the three groups in the surface approach to learning ($F(2,239) = 3.87$, $p = <0.05$). Scheffé post-hoc tests revealed that the LD group reported significantly higher levels of the surface approach to learning than the high achievement group but there was no difference between the LD and the average/low achievement group. In terms of the deep approach, the LD group reported lower levels of the deep approach than the other two groups (the average/low and the high achievement groups scored almost identically), nevertheless, this difference did not reach significance ($F(2, 239) = 2.03$, $p = >0.05$).

Regarding the correlations, Table 4 indicates that for all three groups, deep approaches were positively associated, in most cases significantly, with enjoyment ($r = 0.43$ to $r = 0.50$), individual development ($r = 0.29$ to $r = 0.54$) and utilitarian ($r =$

Table 3. Means and analysis of variance on reading attitudes of the sample

	LD	Average/low performance	High performance				
Reading attitudes	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*F*	df	*p*	n^2
Enjoyment	2.65(0.66)	2.78(0.73)	2.94(0.54)	2.50	2.239	n.s.	0.02
Personal development	3.16(0.42)	3.27(0.48)	3.31(0.45)	1.05	2.239	n.s.	0.00
Utilitarian	2.97(0.42)	3.22(0.49)	3.14(0.39)	3.54	2.239	<0.5	0.03

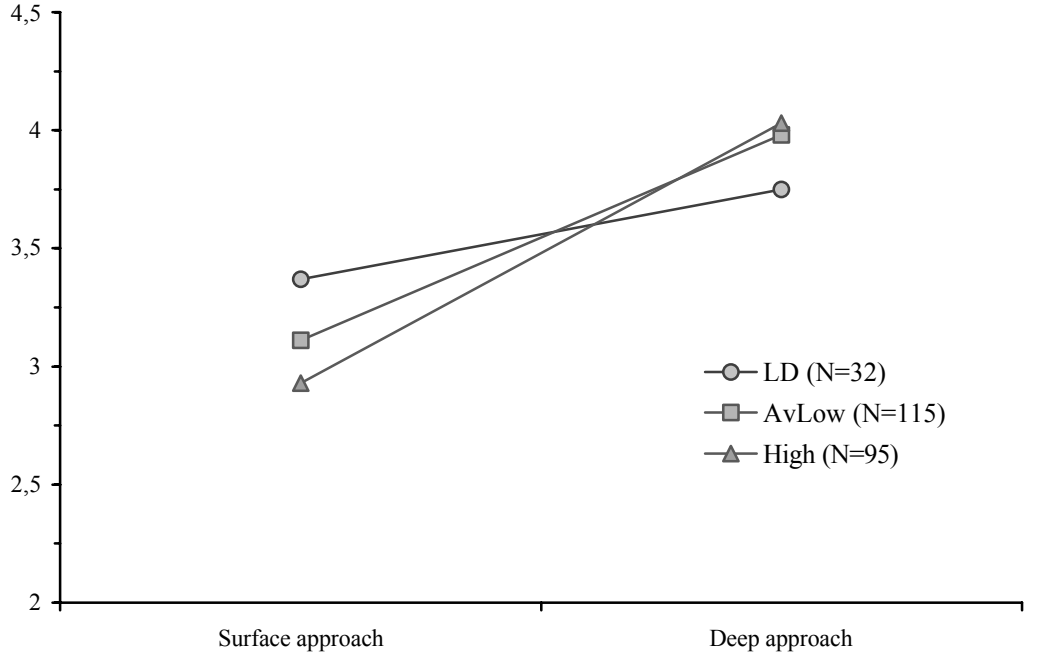

Figure 1. Learning approaches in terms of group of ability

0.16 to $r = 0.64$) dimensions of reading attitudes. Conversely, surface approaches were, for the majority of variables, negatively associated with all the dimensions of reading attitudes. Specifically for the LD group, the correlations were smaller in size, with the only significant positive relationships between deep approach and enjoyment ($r = 0.43$, $p < 0.05$) and the negative relationships between surface approach and utilitarian attitudes ($r = -0.40$). That is, students with dyslexia who displayed a deep approach to learning showed higher enjoyment of reading and students with a surface approach to reading perceived reading as less utilitarian. Regarding the relationship

Table 4. Pearson-*r* correlations between the scales of the *Reading attitudes* and *Approaches to learning* instruments for the three groups ($N = 242$)

	Approaches to learning					
	LD ($N = 32$)		Ave./low ($N = 115$)		High ($N = 95$)	
	Surface	Deep	Surface	Deep	Surface	Deep
Reading attitudes	*r*	*r*	*r*	*r*	*r*	*r*
Enjoyment	−0.29	0.43*	−0.44***	0.50***	−0.46***	0.50***
Individual development	0.23	0.29	−0.14	0.54***	−0.08	0.51***
Utilitarian	−0.40*	0.16	−0.35***	0.37***	−0.26**	0.64***

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 5. Pearson-*r* correlations between the scales of the *Self-perception of ability* and *Approaches to learning* instruments for the three groups ($N = 242$)

	Approaches to learning					
	LD ($N = 32$)		Ave./low ($N = 115$)		High ($N = 95$)	
	Surface	Deep	Surface	Deep	Surface	Deep
SPAS	*r*	*r*	*r*	*r*	*r*	*r*
Reading	−0.42*	0.21	0.02	−0.01	−0.02	−0.06
School satisfaction	−0.41*	0.05	0.05	−0.08	−0.28**	0.14
Total	−0.41*	0.35	0.04	−0.05	−0.23*	−0.02

*$p < 0.05$; **$p < 0.01$.

between approaches to learning and academic self-concept, Table 5 indicates that there are large and strong negative correlations for the LD group, between the children who held a surface approach to learning and self-concepts regarding reading, school satisfaction and the total academic self-concept. This implied that the students who were externally motivated in their learning approach to read reported low levels of confidence in their reading ability and low levels of school satisfaction.

Discussion

The present study examined the link between motivational factors and dyslexia in primary school students. Specifically, the beliefs of competence in academic domains such as reading and writing, the attitudes toward reading and the approaches to learning of children with dyslexia were examined and compared to peers of different academic ability. The hypothesis was that differences would be revealed across the different variables between the dyslexic group and their peers.

Regarding academic self-concept, the LD group consistently displayed more negative perceptions about their abilities in the academic domains than their peers. This was true for all the specific academic domains, except for practical ability, as compared to high achieving peers. Furthermore, results showed that the LD group displayed more negative perceptions as compared to average/low achieving peers in terms of arithmetic ability, school satisfaction and penmanship/neatness. These findings are consistent with the great majority of empirical and meta-analytical studies (Chapman, 1988; Bear *et al.*, 2002; Zeleke, 2004), which demonstrate that indeed children with dyslexia perceive themselves as less competent in academic domains such as reading and mathematics. It has been established that even from the age of 8 years, children are able to make social comparisons, resulting in evaluative references about themselves being increasingly comparative (Harter, 1983). Moreover, these negative self-concepts may imply that, despite the children's participation in intervention programmes, the LD group still considered themselves less able in these domains.

The lack of difference across the three groups in terms of their perceptions of practical ability may indicate that children with dyslexia derive general satisfaction from competence in non-academic domains such as art and craft, 3D constructions that may be connected to strengths in visuo-spatial skills (Singleton *et al.*, 1999).

The results concerning differences in academic self-concept, do not necessarily imply that the children assessed with dyslexia have a negative global or general self-concept, since as noted before, it is important to evaluate the perceived significance of a particular domain for the person's sense of global worth (Kloomak & Cosden, 1994; Kelly & Norwich, 2004). A recent study has revealed that reading and spelling ability were more likely to influence global self-worth in high achieving pupils than in low achieving pupils. In contrast, physical appearance was a greater source of global self-worth for low achieving groups than it was for high-achieving groups (Humphrey *et al.*, 2004). Related to this, children may reorganize their domain-specific self-evaluations, so that investment is reduced in those areas that represent a threat to self-esteem (i.e. academic achievement) and is increased in other areas that are potentially more rewarding (i.e. athletics) (Harter, 1999).

As regards reading attitudes, differences between the LD group and both the high performance and the average/low group were observed, indicating that the LD group consistently valued reading less than their peers, in terms of personal development, enjoyment and practical use for one's future success. Effects were more apparent as regards the utilitarian dimension—i.e. students with dyslexia considered reading of lower task-value as compared to the average/low group. In other words, children with dyslexia did not value reading for its contribution to school success and for their own enjoyment. These attitudes have been shown to predict low levels of voluntary reading (Cox & Guthrie, 2001). Despite the relative lack of evidence as regards reading attitudes of children with dyslexia, these findings are in agreement with a number of studies demonstrating that task-value in learning to read has been shown to be associated with several components of reading performance (Wigfield, 1997). Some evidence also exists linking high motivation and positive attitudes to higher reading achievement and more frequent reading (McKenna *et al.*, 1995; Cox & Guthrie, 2001). To justify this link, two of the key findings from the Progress in the International Reading Literacy Study (PIRLS) indicated that (consistent with the 9-year-olds' reading performance in Greece ranked a little above the overall international mean scale score for the 35 countries involved in the study) the proportion of students expressing positive attitudes to reading was large (8th in rank order).

In light of the above, since reading attitudes are related to perceptions of ability, it was expected that children with dyslexia in the present study would hold more negative attitudes to reading since they had more negative perceptions of academic ability than those of their higher achieving peers. Negative feelings regarding reading do not correspond to a predisposition to seek out reading activities, and as a consequence, children with difficulties are constantly left behind their peers due to restricted access to reading material (Guthrie & Wigfield, 2000). Children perform reading to receive some benefit, therefore they are extrinsically motivated. On the other hand, enjoyment of reading and the disposition to seek out reading activities based on feelings

such as curiosity, deep involvement and challenge means that reading comes from within, and therefore involves intrinsic motivation.

The negative attitudes are linked with the surface approach to learning adopted by the LD group in this study, as compared to the high performance group. Surface approaches in the learning process are motivated by a desire to meet minimum requirements with minimum effort (Biggs, 1987a). They usually result in study behaviours that enable students to reproduce material without analysis or integration, leading to low learning outcomes and are considered inadequate strategies because the purpose is to avoid failure. The study motive in this case is extrinsic. Children with reading difficulties have been found to have low motivation for reading (van Kraayenoord & Schneider, 1999) and usually attribute failures to internal and stable causes and successes to unstable and external causes (Borkowski & Muthukrishna, 1992; Chan, 1994; Palladino *et al.*, 2000). This has also been confirmed with children with dyslexia (Humphrey & Mullins, 2002). Since students' past successes and failures affect their choice of approach, it can be expected that students with dyslexia will be driven by an external motive and in general have lower motivation levels (Thomson & Hartley, 1980; Kavale, 1988; Lamm & Epstein, 1992).

On the other hand, the high and the average/low performance groups reported adopting a deep approach to learning. This approach is characterized by the intention to understand the material being studied, resulting in behaviours that include actively integrating new information with old, and task-centred and task-appropriate behaviours, leading to high learning outcomes and development of analytic skills. The study motive in this case is intrinsic. This is consistent with the literature that confirms that successful students are better able to utilize strategies characteristic of the deep approach. That average/low achievers similarly report using deep approaches to learning is an interesting finding that does not tie in with the relevant literature. Perhaps this finding is the consequence of a methodological limitation of this study, since low and average performance students were combined into one group. A future study could explore this further.

A secondary but important finding drawn from this study is that, although the children with dyslexia who participated in the present study differed considerably from the high achievers as regards academic self-concept, reading attitudes and learning approaches, the differences portrayed were significantly reduced when children with dyslexia were compared to low and average achievers. Similarities documented in the profiles between pupils with dyslexia and low achievers may imply common needs for self-enhancement. However, as already mentioned, this might be the consequence of a methodological limitation—i.e. children's allocation to a group that included both low and average achievers, due to very low numbers found in the low performance group. A future study could examine this factor and whether the finding is repeated.

Future studies could provide useful information about the causes of low motivation and negative self-concept in children with dyslexia, specifically adopting a longitudinal design in order to examine changes in academic self-concept before and after formal assessment of dyslexia. In many cases, the use of a 'label' is necessary, though

not always desirable, in order to access specific interventions and examination allowances. One key question in this situation is what kind of impact such a label has, together with the implications for the children assessed. Further research could also evaluate the perceived level of importance given to academic competence in relation to other domains of self-concept. Moreover, as inferred from these data, it is important to clarify whether dyslexic students indeed differ from their low achieving peers, in the way they deal with the threat that academic failure poses to them. If not, then perhaps we need to consider ways of promoting high-quality learning targeted to all pupils.

Identifying early and providing for dyslexia, organizing schools that are 'friendly' to pupils with dyslexia and promoting learning contexts that facilitate the development of high self-esteem and the use of deep learning approaches may lead to increased engagement in reading and learning behaviours that are consistent with perceptions of the learning environment. Moreover, teachers' high self-efficacy affects their choice and structuring of learning activities; their response to students' attempts; their use of classroom discussions and innovative teaching practices; their response to children who are difficult to teach; their preparedness to include children with disabilities; and the classroom climate. Specific instructional practices in different domains can foster children's intrinsic motivation for reading, and can also take into account that children with reading difficulties may hold different competence beliefs and have motivation when a more diverse set of academic and non-academic domains is included.

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